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TCHHAO,
OR
CHINESE BANK-NOTE.

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THE CHINESE INVENTORS OF BANK-NOTES.

IT is well understood, that the Chinese discovered the properties of the magnet; that they not only invented writing materials, but the art of printing; and were the first to manufacture silk, porcelain, and gunpowder. But it is not so well known that they were the original contrivers of a paper currency.

The most striking trait in the general character of the Chinese is their aversion to every sort of improvement or *progress*. They believe that their social, moral, and political institutions, are perfect; and their laws absolutely forbid the least alteration. Thus it is that, though the Chinese were the first to use a mariner's compass, they are ignorant of navigation: though they invented gunpowder, they prefer bows and arrows to guns; and lastly, although the invention of paper-money has been traced to them, their commercial dealings possess none of those facilities which a paper currency affords.

Most authorities, when consulted as to who were the inventors of paper-money? answer the Mongols. This is a mistake, arising from a passage of the celebrated Venetian traveller, Marco Polo, who first made known to Europe the existence of credit-papers, which were used in his time by the Mongols, the then masters of China. These people afterwards introduced a representative currency into Persia, where it was extensively employed in the thirteenth and fourteenth centuries.

The error of attributing to the Mongols what really belongs to the Chinese is one of those misapprehensions which an advanced knowledge of the Chinese language, and the industry of M. Klaproth, have effectually removed. That learned orientalist, in a paper addressed to the Asiatic Society of Paris*, has furnished—from several of the elaborate native historical works with which China abounds—some very interesting particulars concerning the origin of paper-money, which fixes the invention of it upon the Chinese.

It appears that for *four centuries and a half* before the time at which modern historians usually date the invention of paper-money, a species of nominal currency was in use among the Chinese, namely, in the year 119 B.C. The native annals of that date contain the most ancient record of a financial speculation ever yet discovered. During the reign of *Ou-ti*, an emperor of the Han dynasty, the expenses of the state outran the imperial revenues; to make up this deficiency, the minister of Ou-ti caused the skins of certain white stags that were fed in the imperial park to be cut up into pieces a foot square, ornamented with paintings and inscriptions, and issued as a currency: each skin passing for 40,000 deniers, or about 12*l.* 10*s.* They were called *phi-pi*, or "value in skins;" but only circulated among the courtiers and grandees of the empire. Whoever was invited to the repasts and ceremonies at the palace was obliged to cover the tablet they held before the face, in presence of the emperor, with one of these *phi-pi*.

But the first instance of a regular paper-currency occurs in the history of the reign of Hian-tsoung, of the *Thang* dynasty of Chinese monarchs, towards A.D. 807. The preceding reigns had been marked by the utmost anarchy and confusion, so that the regular currency was so much neglected that all sorts of things were used for money; such as small round pieces of iron, clothes cut up, and even pasteboard. Copper coins having become exceedingly scarce, Hian-tsoung forbad any kind of utensil to be made of that metal, and obliged all merchants visiting the capital, and certain rich native families, to contribute to the public coffers. For these contributions, bills were exchanged called *-thsian*, or "voluntary money." In the year 960 A.D., a new kind of note was issued, derived from the privilege granted to merchants to deposit their goods in the various public treasuries; precisely, it would appear, upon the principle of pawnbroking as at present practised. In acknowledgment of the deposit of their wares, the merchants received a paper answering to the "duplicate," which was called *pian-thsian*, or "accommodation money," and negociable; being received everywhere with eagerness.

The two last-mentioned notes were manufactured of such paper as was in general use among the Chinese at the period; namely, that derived from the bark of a species of mulberry-tree, known to the natives as the *tchu*, and to naturalists as the *Morus papyrifera*. The notes were of a large size, being, like the *phi-pi*, a foot square; their current value was legibly printed on them, and an official seal was also attached.

These securities can hardly be called a nominal currency, because an intrinsic value equal to the sum they represented was deposited in the public treasuries; and it was not till between the years 997 and 1022 that a true system of artificially representing wealth was introduced. At that time, China proper was divided into several separate states: the large province now known as *Szu-tchuen* was one of these, and called the Kingdom of Chon. Here a certain *Tchang-young* introduced a credit-paper called *tchi-tsi*, or "cheques," to replace the iron-money then in use, which was heavy and inconvenient. Out of these a new system of credit-currency arose, and to which may be traced the origin of bills of exchange; for the "cheques" were succeeded by *kiao-tsu* or "changes," which bore a date and were payable every three years: thus in sixty-five years there necessarily occurred twenty-two "changes" or terms of payment. A regular banking system may now be said to have commenced. The monarch deputed sixteen of the most opulent merchants to superintend the new currency, and these actually became bankers. This company failed, and the sovereign, *Tchang-yang*, was obliged to take the whole affair into his own hands, which he did by establishing a bank of issue at Y-tchéon. The *kiao-tsu* was equivalent in value to 1000 deniers, or an ounce of pure silver. We subjoin a drawing of a Chinese "cash," the modern denier. The *kiao-tsu* were of the same manufacture and appearance as the former notes; only their dates of issue and expiration were in all probability printed in addition to the amount they represented.

Forgeries first make their appearance in Chinese history in 1068, for spurious *kiao-tsu* were then found to be in circulation. Though this was a new offence not contemplated by the unalterable Chinese statutes, the innovation of a *new* law was not attempted to provide against it; but the punishment denounced against those who counterfeited the imperial seal was also made the reward of forging bank-notes. By the commencement of the twelfth century, a banking system had spread itself all over China, and there was scarcely a province without its bank and its paper "changes;" but the notes of one district were not current in another. The terms of payment and modes of circulation were frequently changed.

Under the Emperor *Kao-tsoung*, (of the Soung dynasty,) the Hon-pon, or minister of the treasury, hit upon the expedient of paying some of the public creditors in a new security; but this not succeeding, another was tried in 1160, called *hoei-tsu* or "contracts," of 1000 deniers value; and, in 1163, under *Hiao-tsoung*, others were issued for the several sums of 500, 300, and 200 deniers; so that in 1166 the existing issue amounted to 28,000,000 ounces of silver! Besides these, particular provinces had their particular issues, and the country was

* To be found in the *Journal Asiatique*, and also in KLAPROTH'S *Mémoires Relatifs à l'Asie*.

inundated with paper-money. The value of each note deteriorated from day to day; and, despite a new security was made, called *yu-kouan* or "money-bonds," and many expedients to lessen the national embarrassments occasioned by the glut of paper-money, the Mongols, who put an end to the Soung native dynasty in the latter half of the thirteenth century, found the monetary affairs of their new subjects in the utmost confusion.

By these statements, the Chinese historians prove that the Mongols were *not* the inventors of paper-money. On the contrary they found in the country innumerable bank-notes and banks: the Chinese had had their monetary crises, and their bankrupts, and their forgers: in short, every good and evil attendant upon paper-issues. The conquerors increased rather than rectified the embarrassments of the Chinese.

In 1284, *Koublai-khan*, the first of the new dynasty, ordered the mandarin *Lou-chi-joung* to prepare a plan for the establishment of a new paper-circulation. This appeared in (and indeed was confined to) the year 1287; for the new plan was a failure, and the emperor was simply obliged to increase the quantity of those bills called *pao-tchhao**, or "precious paper-money," calling in as many as possible of the old notes of the Souang dynasty. These notes, though similar to former ones, were most elaborately ornamented. In 1351 the entire system had become so rotten that fresh changes were made, but without raising the funds; and when the Mongols were driven from China, they had entirely ruined it by their paper-money.

The Ming (native dynasty), which succeeded that of the Youan or Mongols, caused a total revision of the *tchhao*, and issued six different sorts of notes, respectively for "strings" of 1000, 500, 400, 300, 200, and 100 deniers. But though every expedient was tried to keep up their value, such as forbidding the people to traffic in gold, silver, and precious articles, the value of seventeen "strings" in paper was soon only equal to thirteen in copper. At length, in 1448, only *three* deniers could be obtained for a note for *one thousand!* This seems to have brought about the final crisis. But the government was unwilling to give up the point without the most strenuous efforts; metal coin was forbidden to be passed, and, in 1455, the public taxes were decreed to be paid in *tchhao*, which had now become a "substitute for metal-money." All was, however, of no avail; paper gradually disappeared from the circulation, and nothing more is mentioned about it in the minute Chinese histories after the last-named year.

We prefix to this article an engraving of a bank-note, or *tchhao*, issued by the *Mings*.

The upper division may be called the obverse, and the lower one the reverse, of the note; for, like the leaves which form Chinese books, it is doubled back and pasted together, so as to have the appearance of having been printed on both sides. The writing at the top signifies that it is a (Pao-tchhao) note of the Emperor Zong-King, of the Ming dynasty; that within the border states the amount for which it is to pass, namely, a string of 1000 deniers. The following is a translation of the writing in the lower half or reverse of the note: *At the petition of the treasury board, it is ordained that the paper-money thus marked with the seal of the imperial dynasty of the Mings, shall have currency, and be used in all respects as if it were copper-money. Whoever disobey will have their heads cut off!* It is not recorded whether this terrible penalty was ever enforced; but in spite of it, as we have already seen, these notes became as waste-paper.

At the present time, it would appear that a system of paper-currency, upon a better foundation than any hitherto tried, is slowly gaining ground. This system is still in its infancy, and the bad state of public and private credit in China interposes many obstacles to its ever coming to maturity. In large trading cities there are numerous banks both of deposit and issue. They are not controlled by government, but conducted by private individuals, who issue notes in the nature of checks or *coupons*, like the *pian-thsian* before-mentioned; for the document is cut in half, one portion being presented to the depositor for circulation, and the other retained as a check by the bankers. Bills of exchange have been, in few instances, found convenient by the Chinese; but bad faith has hitherto hindered their extensive employment†.

* The word *tchhao* signifies, "substitute for metal" or money, and is the general name for any sort of paper-money in the Chinese language.

† *China Opened*, by the Rev. Charles Gutzlaff, vol. ii., p. 21.

If ever household affections and loves are graceful things, they are graceful in the poor. The ties that bind the wealthy and the proud to home may be forged on earth, but those which link the poor man to his humble hearth are of the true metal and bear the stamp of heaven. The man of high descent may love the halls and lands of his inheritance as a part of himself, as trophies of his birth and power; the poor man's attachment to the tenement he holds, which strangers have held before, and may to-morrow occupy again, has a worthier root, struck deep into a purer soil. His household gods are of flesh and blood, with no alloy of silver, gold, or precious stones; he has no property but in the affections o. his own heart; and when they endear bare floors and walls, despite of rags, and toil, and scanty meals, that man has his love of home from God, and his rude hut becomes a solemn place.—Dickens.

There is one in the world who feels for him who is sad, a keener pang than he feels for himself; there is one to whom reflected joy is better than that which comes direct; there is one who rejoices in another's honour, more than in any which is one's own; there is one on whom another's transcendent excellence sheds no beam but that of delight; there is one who hides another's infirmities, more faithfully than one's own; there is one who loses all sense of *self* in the sentiment of kindness, tenderness, and devotion to another. That one is Woman.—S.

In reference to the periods which mark the various stages of the progress of the cuckoo through the season, I have somewhere met with the following couplets—

In April,
Come he will.
In May,
He sings all day
In June,
He alters his tune.
In July,
He prepares to fly.
Come August,
Go he must.—Yarrell.

THE RAINBOW.

Soft glowing in uncertain birth,
'Twixt Nature's smiles and tears,
The bow, O Lord! which thou hast bent,
Bright in the cloud appears.
The portal of thy dwelling-place,
That pure arch seems to be,
And, as I bless its mystic light,
My spirit turns to Thee.

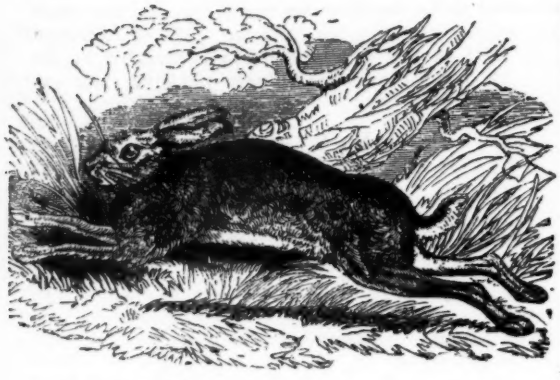
Thus gleaming o'er a guilty world,
We hail the ray of love;—
Thus dawns upon the contrite soul
Thy mercy from above;
And as thy faithful promise speaks,
Repentant sin forgiven,
In humble hope we bless the beam
That points the way to heaven.

Lady Flora Hastings.

RURAL SPORTS FOR THE MONTHS.

MARCH.

Like some poor exiled wretch
The frighted hare leaves her late dear abodes,
O'er plains remote she stretches far away,
Ah never to return! for greedy Death
Hovering exults, secure to seize his prey.—SOMERVILLE.



THAT branch of hunting in which the dogs employed pursue their game by sight, and not by scent, is denominated "coursing," and is a practice of high antiquity and considerable celebrity. There is reason to believe that a dog, quick of sight, and somewhat swift of foot, was known to the ancients nearly 4000 years ago; and in the time of Arrian, who flourished A.D. 150, the practice of coursing had been reduced to a systematic form. Yet the early representations of dogs employed in coursing the hare, present little conformity with the elegant make, and limbs so especially adapted for fleetness, which distinguish our modern greyhound.

Of the latter animal, however, it has been truly said that, "Admire him as much as we will, when we examine him on anatomical, physiological, and true philosophical principles, we must be constrained to consider him as wholly an artificial animal." The coursing of the ancients was of a bolder and more masculine character than that of our own times, for the stag, wolf, wild goat, fox, and other swift animals, were thus pursued; and besides the employment of fleet dogs of various kinds, the huntsmen were provided with suitable weapons, such as bows, spears, darts, &c. The modern practice of coursing is confined to the pursuit of the hare only, and is followed either in its simple form, or with the additional stimulus of matching the dogs of different individuals against each other, and adjudging prizes to the victors.

Simple, or unmatched coursing, though originally considered a sufficiently interesting employment, and still possessing many advocates, is too monotonous in its character to please the zealous admirer of more enlivening sports. An old writer calls "hunting of the hare with greyhoundes a ryght good solace for men that be studiouse, or theim to whom nature hath not geven personage or courage apte for the warres; and also for gentilwomen which feare nether sonne, nor wynde, for appayyring their beautie; and peradventure, (adds he,) they shall be therat lesse idell than they shold be at home in their chambers." Arrian's panegyric of this sport is as follows:—"Concerning coursing with greyhoundes—the which is doubtlesse a noble pastime, and as meet for nobility and gentlemen, as any of the others before declared, especially the course of the hare, which is a sport continually in sight, and made without any great travaile; so that recreation is therein to be found without immeasurable toyle and payne: whereas, in hunting with hounds, although the pastime be great, yet many times the toyle and payne is also exceeding great; and then it may well be called eyther a painfull pastime, or a pleasant payne."

The practice of coursing has been decried even more perhaps than that of hunting, on account of its inhumanity; the chances of escape for the hare being fewer, and the speed to which she is pushed far greater. But it is by no means considered in this light by sportsmen themselves. They hold it unfair and unsportsmanlike to pursue their game at a great disadvantage, and therefore make it a rule that a brace of greyhounds only shall be used in the pursuit of a single hare, and that when a hare is found on her form, it is disgraceful to put her up without withdrawing the dogs to a fair distance, so that the pursuers and the pursued may be nearly on a par. Three greyhounds to one hare was even in olden time considered against the laws of coursing, seeing that "a brace of dogges is enow for such a poor beaste."

Match coursing is a much more exciting pursuit than the one we have just alluded to, inasmuch as it includes something of the competition and anxiety which attach in a still greater degree to horse-racing. The chase of the hare is in this case entered on principally as a trial of speed in greyhounds matched against each other; and these animals, by the exertion of that fleetness for which they are so remarkable, earn a sporting celebrity for their respective owners, and gain for them the prizes awarded on the occasion. Clubs are established in various places, for the promotion of this sport.

But we must turn our attention from the pursuers to the pursued, and examine the history of the timid and inoffensive animal, thus made the object of interest and eager contention. The genus *Lepus*, to which the hare belongs, includes many species of animals, having points of great similarity with each other, and is considered as one of the most natural as well as most numerous and remarkable families in the class of rodent, or gnawing mammalia. Hares, properly so called, or animals of the allied sub-genera agreeing well with them in their main characters, are distributed over most countries on the face of the earth; being found alike in warm regions, on the margins of deserts, in wild and hilly countries, in cultivated lands, and on the verge of perpetual snow. All the species are perfectly defenceless, and find their only chance of safety in the fleetness of their movements; they are all alike under the influence of an almost perpetual fear, and their quick perception of sounds, which would be inaudible to many other animals, renders them watchful and alive to danger. This excessive timidity and apprehension cannot be regarded as otherwise than painful to the animal, and it has been remarked by one of our naturalists that "all but sportsmen must pity creatures which exist constantly under the excitement of acute fear."

The common hare is sufficiently known as to its general figure, which is framed for extraordinary powers of locomotion. The fore-legs are much shorter and more slender than the hind-legs, and by this peculiarity greatly assist the saltatory motion of the animal. It is a singularity of this species to have the palms of the feet covered with hair, which protects them from the injury they would be likely to receive from the rough, dry soil they prefer, and in some measure compensates for the want of that elastic padding, which in the dog and other animals affords so good a security to its possessors. The eyes of the hare are admirably adapted to its habits and necessities. They are very prominent, and the pupil is elongated in a horizontal direction. Thus the field of vision is sufficiently large to allow the animal to keep its pursuers in view, without altering the position of the head. As it is impossible, however, that the hare can look in two directions at the same time, it has been known to run into the very danger it was seeking to avoid. The upper lip of the hare is cleft. The nostrils are circular, and almost hidden in a fold, by which means they are capable of being closed. The tongue is thick and soft. The great length of the ears, and their mobility in every

direction, are very favourable to the reception of sound, and the anatomy of these organs shows that they are particularly calculated to receive such sounds as come from behind. Like the nostrils, they are capable of being closed, and thus, in a state of safety and repose, the animal has the power of lessening that acute perception of sounds which would be unnecessary, as well as irksome at such a time.

Besides these characters which are common to all the genus, the hare has certain peculiarities as a species, the most prominent of which is colour. This, in the natural state of the animal, is always grayish-brown, with the exception of some of the Alpine species, whose colours change with the seasons. The tail is invariably white on the under side, and blackish on the upper part. There is a spot over or around the eye, in many cases white, and always lighter coloured than the surrounding fur, and this spot is, in a state of nature, never wanting. The under part of the body is white, and the tips of the ears are black; the body, especially the upper part, is covered with two sorts of hair, the one long and silky, the other short, fine, and woolly:—the latter is extensively used in the manufacture of hats as a substitute for the hair of the beaver, to which, however, it is greatly inferior in durability and in retention of the colour given by dyeing. In those countries of Middle and Southern Europe, which, compared with our own country, are but thinly peopled, and indifferently cultivated, the number of hares taken annually is immense, so that their skins form an important article of commerce, being exported for the use of the hat manufacturer, as well as employed locally as warm articles of clothing. It is understood that the small kingdom of Bohemia alone furnishes nearly half a million skins in the course of the year, Austria Proper nearly double that number, and Russia and Western Siberia a still larger proportion.

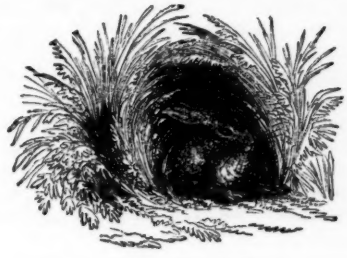
Hares multiply rapidly, and if undisturbed, it is supposed their increase would prove greater than that of most other quadrupeds. A tuft of grass, or heather, or a mere hollow formed on the bare ground, is often the birth-place and dwelling of the young leverets, until they are old enough to provide for the supply of their own wants. The young are suckled by the dam for little more than three weeks, and then begin to separate and make their own forms. They arrive at maturity in one year, and the term of their natural lives is supposed to be eight or nine years.

Hares do not burrow like rabbits beneath the earth; they merely look for a convenient hollow place in a furrow, where, by their similarity in colour with the soil around them, they escape the notice of all but experienced eyes. This is called their seat, and here they pass the greater part of the day, till the approach of evening gives them courage to go abroad in search of sustenance. They have been observed by shepherds and those who are in the habit of watching their proceedings, to change their seat, according to the weather, generally seeking the more elevated ground when rain prevails. In severe weather they repair to the woods, where they will prey on the bark of almost every tree, and are often very injurious to young plantations. Their food consists of vegetables, and they show the greatest relish for milky and succulent plants.

The hare is commonly considered to possess no great degree of intelligence, yet the way in which it doubles to avoid its pursuers seems to evince much sagacity. Fearful as these animals are in their natural state, they have yet been soothed by gentle treatment into a degree of confidence and boldness quite unexpected in creatures of such acknowledged timidity. A French naturalist describes one of these animals as having become entirely domesticated in his house, and having lost its natural wildness, with respect to all the inmates; but showing tokens of fear on the approach of strangers. In winter, it sat before the fire between two large Angora cats, and a sporting dog, with whom it lived on the best of terms; at table it was generally close to its master looking for food, and if thwarted in its expectation would beat with its fore-paws on the hand and arm of the person so treating it.

The age of the hare is, as we have said, reckoned to extend to eight or nine years; but one of Cowper's favourites lived eleven years and eleven months. Of this animal he speaks in the following lines.

> . . . . . One sheltered hare
> Has never heard the sanguinary yell
> Of cruel man exulting in her woes.
> Innocent partner of my peaceful home,
> Whom ten long years experience of my care
> Has made at last familiar; she has lost
> Much of her vigilant, instinctive dread,
> Nor needful here beneath a roof like mine.
> Yes, thou may'st eat thy bread, and lick the hand
> That feeds thee; thou may'st frolic on the floor
> At evening, and at night retire secure
> To thy straw couch, and slumber unalarmed;
> For I have gained thy confidence, have pledged
> All that is human in me to protect
> Thy unsuspecting gratitude and love.
> If I survive thee, I will dig thy grave;
> And, when I place thee in it, sighing say,
> I knew at least one hare that had a friend.



HARE IN HER FORM.

GARDEN HERBS.

RUE.

> Here did she drop a tear; here, in this place,
> I'll set a bank of rue, sour herb of grace;
> Rue even for ruth, here shortly shall be seen,
> In the remembrance of a weeping queen.—SHAKSPEARE.

THE name *herb of grace*, given to this plant in the above lines, was in common use in Gerard's time, and is supposed to have arisen from the custom of the Romish clergy of sprinkling holy water from bundles of bitter herbs.

Rue belongs to an extensive natural order of plants called *Rutaceæ*, inhabiting widely different situations from each other, and forming, as they are thus united, an interesting, but somewhat heterogeneous group. This order contains thirty-seven genera, or families, most of which are strong-scented plants. Some of them are shrubby in their habit, some arborescent: many of them possess medicinal qualities, as the *Guaiacums*, (one species of which yields also the *lignum vitæ* of commerce): others are favourite plants in greenhouses, as the *Diosmas*, and are very easy of cultivation. Common garden rue is the type of the order. It is a native of the South of Europe, and is said to have been first cultivated in this country in 1562, but writers of that period, and of a still earlier date, make mention of it as of a common and well-known plant. Thus we find Tusser, who wrote before that time, saying,—

> . . . . . What savour is better,
> For places infected, than wormwood and rue?

The plant is accurately described in the quaint language of Gerard.

Garden rue, or planted rue, is a shrub full of branches, now and then a yard high, or higher; the stalkes whereof

be green: the leaves hereof consist of divers parts, and are covered with a whitish barke, the branches are more divided into wings, about which are certaine little ones, of an odd number, something broad, more long than round, smooth, and somewhat fat, of a gray colour, or greenish blew: the floures in the tops of the branches are of a pale yellow, consisting of four little leaves, something hollow, in the middle of which standeth up a little head or button, four-square, seldom five-square, containing as many coffers as it hath corners, being compassed about with divers little yellow threds, out of which hang pretie fine tips, of one colour. The seed groweth in the little coffers: the root is woody, and fastened with many strings. This rue hath a very strong and rank smell, and a biting taste: it joyeth in sunnie and open places: it prospereth in rough and brickie ground.

Among the ancient Greeks and Romans this herb was held in great esteem. The Greeks used it, together with parsley, for the bordering of their gardens, and as the gardens could not be entered without passing this border, it became a proverb among them, when any persons were about to enter on an undertaking, but had not yet taken any steps towards it, "You are not yet arrived at the parsley and rue." The uses to which the ancients applied this plant were many of them very superstitious, and it was generally believed that the efficacy of the plant was enhanced by stealing it from a neighbour's garden. In Aristotle's time rue was worn about the neck as a charm against witchcraft.

That rue was planted to a considerable extent among the Romans appears from the directions of Pliny to rue gatherers,—that they keep their hands well gloved, to avoid the blisters which the pungency of this herb is apt to produce. The same author notices the poisonous nature of the juice of rue, when taken in too great quantity, especially that drawn from the rue which grew in Macedonia, about the river *Aliacmon*, and in Galatia, and states that juice of hemlock destroys this poisonous quality. The juice of rue was kept in boxes made of brass or copper, and was used against the sting of serpents, scorpions, bees, hornets, &c., and for the bite of mad dogs. It was employed to foment the limbs of persons benumbed with cold: it was drunk with wine to cure the head-ache: it was taken likewise to prevent the consequences of excess in drinking. The leaves were eaten by engravers, carvers, and painters, as a preservative to the eye-sight: others just touched the corners of their eyes with the juice, to cure weakness of vision. A drink was made from it for the cure of all complaints incident to four-footed animals: its reputed virtues are, in fact, too numerous and too contradictory to be recounted here.

Besides the medicinal uses for which this herb was valued among the Romans, it was also esteemed on account of the flavour it imparted to their wines. Columella, in speaking of it, says,—

> And *rue*, which the Palladian berries' taste excels;

and Pliny informs us that when Cornelius Cethegus was chosen consul with Quintius Flaminius, he gave to the people, after the election, a largess of new wine, aromatized with rue. This would probably be very repugnant to modern taste, for this herb is intolerably bitter.

The leaves of rue are said to have formed a principal ingredient in the famous antidote to poison, used by Mithridates, king of Pontus. This antidote, with slight alterations, has been in use for nearly nineteen centuries, and is still employed on the Continent. It has been exploded in Britain, and laughed at as an absurd farrago, ever since Dr. Heberden published his *Antitheriaca*.

Pliny tells us that the weasel is so well acquainted with the virtues and powers of rue, that before he attacks the serpent he eats the herb to prevent the poison from taking effect. Macer, who wrote his Latin poem about twenty years before the Christian era, notices the same thing, and an old naturalist has given the following translation of the lines:—

> And weezels teach, it can withstand strong poyson's spite,
> Which, when they are about with serpents black to fight,
> In wondrous sort do first of all rue nibble, eat, and bite.

If we look into the writings of the old medical practitioners and herbalists of our own country, we shall find the qualities of this plant described in much the same exaggerated strain that we have noticed in the ancient authors of Greece and Rome. One tells us that the very smell of rue has been known to preserve from infection during pestilence, and therefore we are to wear a nosegay of it whenever we visit a person ill of any contagious disease; and that if we would be still farther secured from danger, we must chew some of the leaves, or eat of a conserve of rue. Another affirms that by eating the leaves of rue, persons may cure themselves of the king's evil. A third tells us that the juice of rue, made hot in the rind of a pomegranate, and dropped into the ears, is a cure for the ear-ache, and is also a remedy for shingles, St. Anthony's fire, and other disorders; that the herb itself, a little boiled or scalded, kept in pickle, and eaten, is good for dimness of the eyes, and, boiled in vinegar, relieves shortness of breath and pain in the chest, side, or joints. A fourth ascribes to it the virtue of curing gout and dropsy, and of removing ringworm, warts, and all diseases of the skin. A fifth pronounces it to be excellent in all illnesses of the stomach which proceed from a cold cause, and only dangerous in the too frequent use of it; and a sixth is so full of its praises, that at the close of his remarks he declares that the greatest commendation he can bestow upon it falls short of its merits.

But we would not have our readers misled by these extravagant eulogiums, or induced, by this slight mention of them, to employ the herb in the way, or for the purposes above named. Let them rather attend to the opinions of modern and better-skilled persons, who assure us that its usefulness is uncertain and unimportant, and who at the same time acquaint us that large and repeated doses produce parching thirst, burning pain of the stomach and bowels, head-ache, delirium, and death.

Wild rue is much more energetic in its action than the cultivated sort, and therefore more caution is required in using it. Gerard declares it to be virulent and pernicious, and says that it sometimes "fumeth out a vapour or air, so hurtful that it scorcheth the face of him that looketh upon it, raising up blisters, wheales, and other accidents: it venometh their hands that touch it, and will infect the face also, if it be touched with them before they be clean washed, wherefore it is not to be admitted into meat or medicine."

Rue is a hardy shrub, and is easily cultivated by planting the seeds, or slips, or cuttings, early in the spring months. It blossoms in July and August, or, if it be in a warm country, or in a sheltered situation, still earlier. According to Pliny, there is such friendship between it and the fig-tree that it prospers nowhere so well as under a fig-tree. Plutarch notes the same circumstance in his first booke of the Symposiacks or Feasts, and says it becomes more sweet and mild in such situations, because it takes away some of the sweetness of the fig-tree, and parts with some of its own bitter flavour.

CHRISTIANITY is not a latitudinarian religion, proposing a variety of independent doctrines, and leaving to the choice of its professors, which they will embrace, and which they will reject: but it is a religion precise and definite; it proposes a system of truths, mutually connected with and dependent on each other; it represents those truths as the fit objects of a Christian's faith; and to a sincere and conscientious belief and profession of them it promises happiness; on a wilful disbelief and rejection of them it denounces woe. —BISHOP MANT.

FRESH-WATER FISH.

Introduction.

Each rising charm the bounteous stream bestows,
The grass that thickens, and the flower that blows.
And while the vale the humid wealth imbibes,
The fostering wave sustains the finny tribes:
The carp, with golden scales, in wanton play,
The trout in crimson-speckled glory gay;
The red-finned roach, the silver-coated eel;
The pike, whose haunt the twisted roots conceal;
The healing tench, the gudgeon, perch, and bream;
And all the sportive natives of the stream.

When we consider that water occupies more than two-thirds of the globe, we shall have no difficulty in admitting the statement made by naturalists, that fishes constitute by far the most numerous class of vertebrated animals, both as respects the number of individuals and the variety of their forms. Indeed, the constant accessions which are being made to our knowledge of fishes, and other considerations, lead us to suppose that not more than half the existing species are known and described. The natural history of fishes is more imperfect than that of quadrupeds, birds, and insects, because their native abode is of vast dimensions, and can to a very limited extent only be explored by man, from whose curious eye fishes can easily withdraw themselves into haunts inaccessible to the inhabitants of the land; thus the study of Ichthyology, interesting and beautiful as it is, presents more difficulties than any other department of natural history.

Fishes were arranged by Linnæus in six principal orders, and subdivided into several tribes. Four of these were marked by the position of their ventral or belly fins, and two by their gills. But the most approved arrangement is that of Cuvier, who places fishes in the fourth class of organic beings, the first three comprising beasts, birds, and reptiles. The class of fishes he divides into two sub-classes, viz., 1st, cartilaginous, and 2nd, osseous fishes. In the former the bones are gristly, and in the latter firm, although far less compact than in the higher orders of animals.

The general form of fishes is cylindrical, pointed more or less at each end, and slightly compressed at the sides; but this form is subject to many extraordinary variations, adapted to the economy of the animal: some fish are short and round—others are elongated;—some are compressed—others depressed: the most common form, however, is that first given, a familiar example of which is presented by the mackerel, which exhibits, as Mr. Yarrell remarks, "the highest degree of elegance in shape, and when recently taken from the water, is so rich and so varied in its colour, as to be fairly entitled to be considered one of the most beautiful among British fishes."

It is almost superfluous to remark that the forms of fishes are admirably adapted to their general habits and economy, because we know how much gracious provision is made by the Almighty for all His creatures. This fact is so constantly witnessed by the naturalist, and he sees it illustrated in so many thousand ways, almost at every advancing step which his improving knowledge leads him, that while it constitutes a principal charm in the study of natural history, it often brings up to his mind the gentle monition of the Saviour, that God, who forgetteth not the sparrows, who feedeth the ravens and clotheth the grass of the field, will not discontinue His watchful care over those whom He has declared to be far better than they.

The external form of fishes tends to celerity and ease of motion: man has imitated this modelling in the build of those ships in which the quickest despatch is needful; but human competition against the perfection of nature's works always fails, for all the larger fishes can not only overtake the fastest-sailing vessel, but play around it, apparently without any unusual effort.

Most fishes, in addition to the great fin on the tail, are furnished with two pairs of fins upon the sides, two single fins upon the back, and one upon the belly, or between the belly and the tail. These fins are highly important as organs of motion, and they enable the naturalist, by their structure, position, and number, to distinguish orders, families, and genera. But the chief instrument of velocity is the tail, aided by the strength and pliancy of the back-bone: by the impulse of this organ alone the animal darts through the water with the swiftness of an arrow, the wedge-shaped head enabling it to divide the water with ease. But whether in pursuit of prey or avoiding an enemy, the smaller fins are all laid close to its body: these fins are too minute and flexible, compared with the animal's weight, to impel it so quickly; their peculiar office is to adjust and modify the motion imparted by the energy of the tail. The ventral and dorsal fins keep the fish in its proper position, and by means of the former fin the fish is probably assisted in raising or depressing its body in the water. The pectoral fins assist and regulate progressive motion: by extending them, the progress is stopped when swimming rapidly; and by folding either, while the other continues to play, the turn to the left or right is accomplished. The balancing use of the fins has been shown by experiments on several large-headed fish.

Fishes are furnished with certain protecting organs, which have been divided into the three distinct processes of skin, scales, and spines. The skin consists of the dermis, or true skin, a mucous tissue, and an epidermis, or cuticle. The mucous tissue, which in all animals is the seat of colour, is remarkable in fishes for its brilliant tints and iridescent reflections. The cuticle is generally covered with a mucous secretion, which also extends to the scales. The scales when viewed by the microscope present a wonderful and beautiful construction: they serve many important purposes in the general economy of fishes. The sharp spinous appendages, which are placed in different parts of the body in different fishes, seem intended as weapons either of defence or of offence.

The inhabitants of the waters as well as those of the land depend upon the oxygen of the atmosphere for respiration: the quantity of air necessary to sustain the life of a fish is smaller than that required by warm-blooded animals; but a greater or less supply of air is essential to every living being. The death of fish in a severe frost is in consequence of the congelation of the surface of the water, whereby the external air is excluded: the poor animals below the sheet of ice must perish unless an opening be made to admit the air: we see the fishes themselves bear witness to the fact that they cannot live without air, in the eagerness with which the suffocating creatures crowd round any opening made in the ice. The inconvenience they suffer is so great as to deprive them on these occasions of their natural timidity, for they can be caught by the hand without difficulty. The peculiar motion of the fish's mouth and gill-lids as if in the constant act of drinking, (whence the vulgar saying, "as thirsty as a fish,") is nothing more than the act of respiration. The gills, which act the part of lungs, are placed externally: they may be described as consisting, in the bony fishes, of four arched bones placed in succession close behind the mouth on each side, and covered by an operculum or gill-lid. On these arched bones are spread out several fine laminæ, or thin membranous folds, in which the artery bringing the blood from the heart, spreads itself out into very numerous and minute ramifications. The operculum is moveable by means of muscles attached to it. The fish in respiring takes a mouthful of water, and passing it to the back of its mouth allows it to remain there a moment in contact with the gills, through which at the same time the blood is passing freely. Water, exposed to the air, always contains a portion of that fluid, and the air thus dissolved by the water acts upon the fish's blood; the fish then lifts its

operculum and causes the water to be discharged backwards. The blood being thus aërated is again collected from very fine branches into trunks, which, running from each of the branchial ribs, finally unite and form the aorta for conveying the blood to the whole body. From this, the blood is returned by the veins to a simple auricle, thence it passes into a single ventricle, which, in turn, drives it into the branchial artery, and so back to the gills again. "From what we have said of the mode of respiration, it is clear that a trout, before it attempts to breathe, must turn its head up against the stream. Were it to attempt this operation facing down the stream it would in vain try to let out the water from its gills, for as soon as it had lifted its operculum, the current would pour in water from behind, in place of suffering it to discharge what was there. It therefore becomes part of the angler's art, to keep the head of the trout he has hooked down the stream, in which situation it cannot attempt to breathe, and is therefore the sooner exhausted." (LORD'S *Popular Physiology*.)

Many fishes are furnished with a bladder filled with air, and placed in the upper part of the abdomen close against the spine; this has been thought to assist the function of respiration. It is however more probable that the air-bladder is destined to assist the animal's movements; for we find it largest in such fishes as move with great velocity. This organ is wanting in flat-fish, where, however, the large lateral fins supply its place; also in the lamprey, which, in consequence, moves but slowly along the bottom of the water. There seems however but little doubt that this organ enables fishes to maintain and adapt their specific gravity to the various depths of the element in which they move.

In whatever way then we regard fishes, we see that by their internal structure and outward shape they seem equally well furnished with the means of enjoying life as birds or quadrupeds. When the senses of fishes, and other faculties pertaining to their organization are examined, we find that nature having intended them for less perfect beings has been proportionably sparing in her endowments. The brain is very small. The organs of smell and the nerves supplying them, are perceptible in most fishes; but as air is the only medium for the diffusion of odours, we can scarcely suppose that residing in the water they are affected by them; but it has been supposed that the olfactory membrane serves them instead of a distinguishing palate, in the same way as we distinguish by our taste.

The taste of fishes must be imperfect, if its delicacy arises from the softness of the organ; since the whole mouth of most fishes is covered with a hard bony substance, by which they cannot discriminate bodies by the palate. Salt-water fishes have been known to swallow the fisherman's plummet instead of the bait: indeed, the greediness of the inhabitants of salt-water is prodigious: the lines of the fishermen are coarse and clumsy; the baits are seldom more than a piece of fish or the flesh of some quadruped, stuck on the hook in a rude manner. On the banks of Newfoundland, the hook, which is only hidden by the entrails of the animal last taken, is dropped into the water, the cod seizes it at once, and the fishermen have but to pull up as fast as they can throw in: but it is otherwise in fresh water, for, as Mr. Daniel observes, "The lines must be drawn to a hair-like fineness, be tinctured of the peculiar colour of the stream, the bait must be selected with care, or formed with the nicest art, and still the fishes approach with diffidence, and often swim round it with disdain, while hours are wasted in fruitless expectation, and the patience of an angler passes into a proverb."

The eyes of fishes are peculiarly adapted to vision in so dense and highly refractive a medium as water. The outer surface of this organ is flat, and the internal one spherical: the flat cornea sustains less injury than a projecting one, especially in the absence of eyelids and other projecting coverlids: this flatness, however, is compensated by the greater magnifying power of the crystalline lens. But the particular form and situation of the eyes of fishes vary in different species according to their position in the waters, their general habits, and the mode in which they pursue their prey. When we look upon the surface of the waters, and our eye seeks in vain to penetrate the depth, we must not suppose that their inhabitants are similarly circumstanced with respect to us. When we are on the outside of a room, we know how difficult it is to distinguish objects within, especially when the solar light falls obliquely upon the glass: but those within the room have no such difficulty: they can see clearly all that passes without; and this we may fairly presume to be the case with fishes—they can see clearly objects out of the water, while we cannot often see them in the water. Much light is absorbed below certain depths from the surface, and we find that those fishes which dive deep have very large organs of sight.

It is a very common error to suppose that fishes are destitute of hearing: those which have the gills free have no external openings for the ears, but two such openings are discovered in fishes which have fixed gills. In both cases, however, internal provision is made for this very important function: indeed, the custom is as old as the ancient Romans to keep pet fish in ponds, and train them to swim to a certain spot, at the sound of a bell, to be fed. Mr. Swainson tells us, as "a well-authenticated fact, that the Chinese, who breed great numbers of gold-fish, call them together, at the time of feeding, by a whistle; and the same mode of summoning other species by a noise, in aquatic preserves, is upon record."

The teeth of fishes are so constant and permanent in their characters as to be second only to the fins in determining character. The food of most fishes is of an animal nature, and they seem as if impelled by urgent and constant necessity to pursue their prey. This appetite surpasses both in strength and activity those bounds which in other orders of the animal kingdom Nature seems to have prescribed. Every aquatic animal falls a victim to the indiscriminate voracity of fishes. Insects, worms, or the spawn of other tenants of the waters, sustain the smaller tribes, which, in their turn, are pursued by larger and more rapacious enemies.

From their extraordinary voracity, (says Yarrell,) their rapid digestion, and the war of extermination they carry on among themselves, the greater and more powerful fishes consuming the smaller and weaker, from the largest to the most diminutive: add to this, the constant and extensive destruction effected by the numerous sweeping nets of ruthless man, and it is probable that comparatively but few fishes die a natural death.

The same talented naturalist remarks that "the wounds of fish heal rapidly; and they appear to have but few diseases, probably owing to the uniformity of the temperature in the medium in which they reside."

We have thus far given a brief and general view of the structure and habits of fishes. We are about to invite the reader's attention to the principal individuals which inhabit fresh water; and, in a course of illustrated articles, we propose to state the natural history of each fish, so far as it is well authenticated by the united observations of credible naturalists: at the same time, we shall avail ourselves of such curious antiquarian and anecdotal information which will tend to illustrate the state of knowledge as it existed in former days.

HE who looks not beyond this world, cannot feel pleasure in anything which tends to disturb his comforts, or thwart his will.—H. W. B. DAUBENEY.

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